Add events to trials

An event is a single action in the time span of a trial, for example, a foot contacting the floor during a walking trial, or a knee angle exceeding a particular angle.

Events are normally added to your trial data automatically as part of the capture workflow, when you run **Plug-in Gait Dynamic** or other dynamic pipelines that include **Detect Events From Forceplate** and **Autocorrelate Events**. For more information, see step 7 of Capture the required movement.

However, if events are not automatically detected, or are only partially detected, you will need to add them manually. This is likely to be necessary in the following scenarios:

- If you are not using a force plate; or
- The floor is not flat (ie, the movement being captured involves stepping, climbing, etc); or
- The trial includes movement that is not a cyclical gait movement (for example, some sports movements)

If your trial type does not allow the automatic addition of events, you can add them manually, using the timebar as described below.

For more information on working with events, see:

- Add events to trial data
- Delete events that are outside the region of interest
- Customize event identification mode
- Customize cycle visualization
- Calculate step width and limp index

Add events to trial data

To add events to motion capture trial data:

1. From the **Data Management** tab, open the required trial, ensuring that it contains no gaps or other issues (see Review data quality and Fill gaps in trial data).
2. Display the desired view (**3D Perspective**, **3D Orthogonal**, **Camera**, or **Graph**).
3. Enter event identification mode in either of the following ways:
   - On the time bar, click the **Enter Event Identification Mode** button; or
   - Press CTRL+E.
   The mouse pointer changes to a vertical arrow, to indicate that you are now in event identification mode.
4. On the time bar, zoom in or out on the timescale (right-click and drag) to adjust the time span of data displayed in the view pane and move the current time indicator (blue line) along the time bar to locate the desired frame.
5. Lock the event context by positioning the mouse pointer over the desired **Left**, **Right**, or **General** line on the selected frame (the line for a context is highlighted when the mouse pointer hovers over it) and pressing the UP ARROW or DOWN ARROW key. When the event context is locked, moving the mouse does not change the context.
6. Set a new event in the current context on the selected frame by either left-clicking or pressing ENTER and then selecting the desired command from the context menu
   - **Create Event Foot Strike** Creates a foot strike event at the selected frame.
   - **Create Event Foot Off** Creates a foot strike event at the selected frame.
   - **Create Event General** Creates a general event at the selected frame, represented by a vertical bar on the timeline. You cannot name general events and they are not saved to the event creation menu for future use.
   - **Create Custom Event** Creates a custom event at the selected frame that you can name, represented by a caret (^) on the timeline. When you create and name a custom event, it is added to the event creation menu, so you can select it again in future.
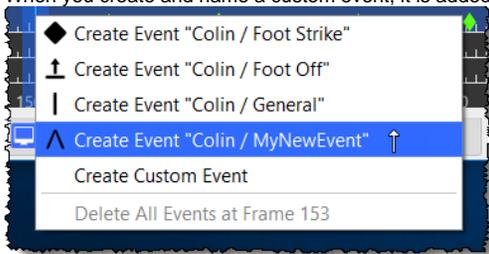
7. Navigate existing events in either of the following ways:
   - In the time bar controls, click the **Jump to the previous event** or **Jump to the next event** button; or
   - Press CTRL+LEFT ARROW or CTRL+RIGHT ARROW to go the previous or next event.
8. If required, you can:
   - Move an existing event to another frame by clicking in it with the left mouse button, holding the button down, dragging it left or right along the timeline.
   - Move the event at the current frame in the current context back or forward one frame by pressing ALT+Left- or Right-arrow key.
   - Delete existing events:
     - **Single event**: On the time bar, click the event or press ENTER, and from the context menu select **Delete Event <Type>**.
     - **All events on current frame**: On the time bar, click the desired event or press ENTER, and from the context menu select **Delete All Events at Frame x**.
     - **All events in trial**: On the time bar, right-click anywhere and from the context menu select **Clear All Events**.

9. When you have finished editing the current event context, unlock the event context by either moving the mouse over a different context or using the Up/Down arrow keys on the keyboard.
10. Repeat steps 5-9 for each event context you wish to edit.
11. When you have finished editing all events, exit event identification mode in any of the following ways:
    - In the timebar controls, click the **Enter Event identification mode** button again; or
    - Press CTRL+E; or
    - Press ESC

If you add gait cycle events before you crop a trial, you probably want to delete events that are outside the cropped region. (For information on cropping trial data, see Crop trials.)

Delete events that are outside the region of interest

If you crop a trial after you have added events to it, events may be retained in the discarded (cropped) region of the trial. To remove these events, do either of the following:

To delete events that are outside the region of interest:

1. Do either of the following:
   - Right-click on the time bar of the cropped trial and click **Delete Events Outside Region of Interest**; or
   - In the **Pipeline Tools** pane, from the **Events & Timebar** operations, select **Delete Timebar Events** and in the **Advanced Properties**, select whether to delete events inside or outside of the specified region.
2. Run the **Delete Timebar Events** operation to remove the unwanted events.

Customize event identification mode

To customize options that affect event identification mode:

1. Open the **Options** dialog box (press F7).
2. On the left of the dialog box, click **Time Bar**.
3. In the **Event Identification Mode** section on the right, select (or clear) **Focus on marker** and enter or select the markers to focus on for **Left** and **Right** contexts.

Customize cycle visualization

By default, all the cycles (gait or other) that have been defined by sets of time bar events, are displayed on the time bar.
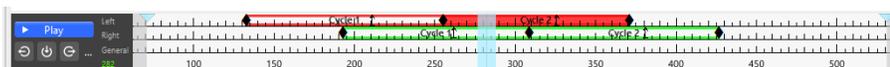
This provides an easy way to identify:

- How many cycles are defined
- Where they are temporally
- Whether they are associated with force plate activity (indicated by solid color instead of colored outline only)
- How large they are (number of frames)
- Whether the left or right side is indicated:
  - Left = Red
  - Right = Green

To turn the visual display on or off or to change the default color options and other visual indicators, in the **Options** dialog box (press F7), on the left side click **Time Bar** and change the required properties on the right.

To turn on or off the display of the frame count, right-click on the time bar and select or clear **Show Cycle Frame Count**.
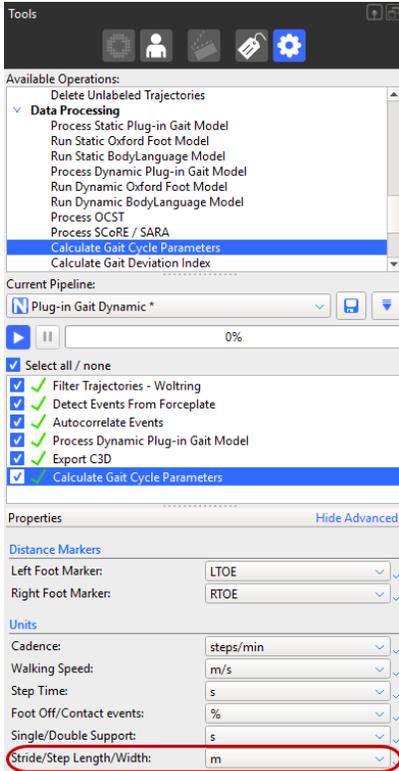
Calculate step width and limp index

If your trial includes **Foot Strike** and **Foot Off** events, you can use the **Calculate Gait Cycle Parameters** pipeline operation to calculate step width and limp index.
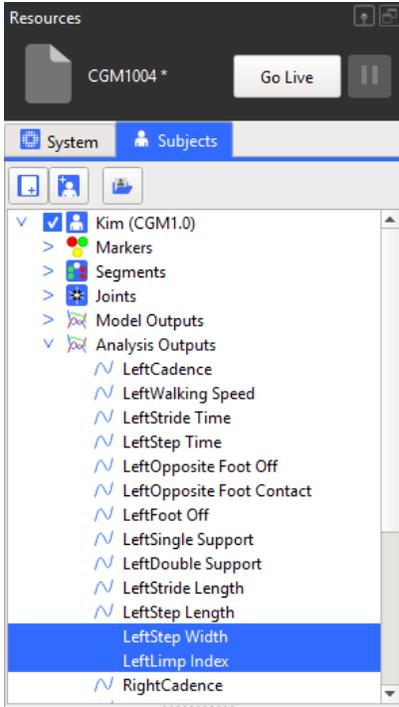
To calculate step width and limp index:

1. Ensure your trial data includes both **Foot Strike** and **Foot Off** events. If it doesn't, either recapture the data or add the missing events.

2. Add the **Calculate Gate Cycle Parameters** operation to your current pipeline in the usual way.
3. In the **Properties** pane, ensure that the units for the **Stride/Step Length/Width** setting are as required.

4. Run the **Calculate Gate Cycle Parameters** operation on your data.
   In the **Subjects Resources** pane, the **Analysis Outputs** include both step width and limp index.

On the **Log** tab, the step width and limp index data is displayed.